


STATE OF UTAH DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS AND MINING						FORM 3 AMENDED REPORT <input type="checkbox"/>				
<b>APPLICATION FOR PERMIT TO DRILL</b>						1. WELL NAME and NUMBER North Alger 1-34 SWD				
2. TYPE OF WORK DRILL NEW WELL <input checked="" type="checkbox"/> REENTER P&A WELL <input type="checkbox"/> DEEPEN WELL <input type="checkbox"/>						3. FIELD OR WILDCAT NATURAL BUTTES				
4. TYPE OF WELL Water Disposal Well Coalbed Methane Well: NO						5. UNIT or COMMUNITIZATION AGREEMENT NAME				
6. NAME OF OPERATOR KOCH EXPLORATION COMPANY LLC						7. OPERATOR PHONE 303 325-2562				
8. ADDRESS OF OPERATOR 950 17th Street, Suite 1900, Denver, CO, 80202						9. OPERATOR E-MAIL howard4d@kochind.com				
10. MINERAL LEASE NUMBER (FEDERAL, INDIAN, OR STATE) UTU003405			11. MINERAL OWNERSHIP FEDERAL <input checked="" type="checkbox"/> INDIAN <input type="checkbox"/> STATE <input type="checkbox"/> FEE <input type="checkbox"/>			12. SURFACE OWNERSHIP FEDERAL <input checked="" type="checkbox"/> INDIAN <input type="checkbox"/> STATE <input type="checkbox"/> FEE <input type="checkbox"/>				
13. NAME OF SURFACE OWNER (if box 12 = 'fee')						14. SURFACE OWNER PHONE (if box 12 = 'fee')				
15. ADDRESS OF SURFACE OWNER (if box 12 = 'fee')						16. SURFACE OWNER E-MAIL (if box 12 = 'fee')				
17. INDIAN ALLOTTEE OR TRIBE NAME (if box 12 = 'INDIAN')			18. INTEND TO COMMINGLE PRODUCTION FROM MULTIPLE FORMATIONS YES <input type="checkbox"/> (Submit Commingling Application) NO <input checked="" type="checkbox"/>			19. SLANT VERTICAL <input checked="" type="checkbox"/> DIRECTIONAL <input type="checkbox"/> HORIZONTAL <input type="checkbox"/>				
20. LOCATION OF WELL		FOOTAGES		QTR-QTR	SECTION	TOWNSHIP	RANGE	MERIDIAN		
LOCATION AT SURFACE		953 FNL 665 FEL		NENE	34	10.0 S	19.0 E	S		
Top of Uppermost Producing Zone		953 FNL 665 FEL		SESE	34	10.0 S	19.0 E	S		
At Total Depth		953 FNL 665 FEL		NENE	34	10.0 S	19.0 E	S		
21. COUNTY UINTAH			22. DISTANCE TO NEAREST LEASE LINE (Feet) 4382			23. NUMBER OF ACRES IN DRILLING UNIT 1600				
			25. DISTANCE TO NEAREST WELL IN SAME POOL (Applied For Drilling or Completed) 129			26. PROPOSED DEPTH MD: 5000 TVD: 5000				
27. ELEVATION - GROUND LEVEL 5295			28. BOND NUMBER 82203357			29. SOURCE OF DRILLING WATER / WATER RIGHTS APPROVAL NUMBER IF APPLICABLE 49-2231, 43-8496, 49-1645				
<b>Hole, Casing, and Cement Information</b>										
String	Hole Size	Casing Size	Length	Weight	Grade & Thread	Max Mud Wt.	Cement	Sacks	Yield	Weight
Cond	24	20	0 - 40	36.0	Unknown	0.0	No Used	0	0.0	0.0
							No Used	0	0.0	0.0
Surf	12.25	9.625	0 - 2500	36.0	J-55 LT&C	11.0	Type V	250	2.81	11.5
							Class G	473	1.15	15.8
Prod	8.75	7	0 - 5000	29.0	L-80 LT&C	11.5	Poz Light	250	1.79	12.0
							Premium Lite High Strength	260	1.15	15.8
<b>ATTACHMENTS</b>										
<b>VERIFY THE FOLLOWING ARE ATTACHED IN ACCORDANCE WITH THE UTAH OIL AND GAS CONSERVATION GENERAL RULES</b>										
<input checked="" type="checkbox"/> WELL PLAT OR MAP PREPARED BY LICENSED SURVEYOR OR ENGINEER					<input checked="" type="checkbox"/> COMPLETE DRILLING PLAN					
<input type="checkbox"/> AFFIDAVIT OF STATUS OF SURFACE OWNER AGREEMENT (IF FEE SURFACE)					<input type="checkbox"/> FORM 5. IF OPERATOR IS OTHER THAN THE LEASE OWNER					
<input type="checkbox"/> DIRECTIONAL SURVEY PLAN (IF DIRECTIONALLY OR HORIZONTALLY DRILLED)					<input checked="" type="checkbox"/> TOPOGRAPHICAL MAP					
NAME J. Darlene Tadlock				TITLE E&P Technician			PHONE 505 334-9111			
SIGNATURE				DATE 10/30/2014			EMAIL tadlockd@kochind.com			
API NUMBER ASSIGNED 43047548930000				APPROVAL  Permit Manager						

# Koch Exploration Company

## DRILLING PROGRAM

### North Alger 1-34SWD

<b>WELL:</b>	North Alger 1-34SWD	<b>PROPOSED DEPTH:</b> 5,000 MD
<b>COUNTY:</b>	Uintah	<b>TRUE VERTICAL DEPTH:</b> 5,000' TVD
<b>API:</b>	TBD	<b>ELEVATION:</b> 5,295' GL
		<b>ESTIMATED RKB:</b> +/-5,307' KB
<b>SHL:</b>	953' FNL & 665' FEL (NENE) Section 34, T10S, R19E S.L.B.&M. 39.908228, -109.761103 (NAD 83)	

**1. & 2. Estimated Tops of Important Geologic Markers:**  
**Estimated Depths of Anticipated Water, Oil, Gas, or Mineral Formations:**

<u>Formation</u>	<u>TVDepth</u>	<u>Potential Problems</u>	<u>Resource</u>
Uintah	Surface		
Green River	960'	Lost Circulation	Possible Oil
Top Upper Conf.	2,765'		
Base Upper Conf.	2,872"		
Wasatch	4,326"		Possible Gas
Top Lower Conf	4,335'		
Base Lower Conf.	4,443'		
TD	5,000'		
Max Anticipated Bottom Hole Pressure			2,150 psi
Max Anticipated Surface Pressure (MASP)			1,050 psi

- 3. Pressure Control Equipment (Schematic Attached):**  
Please see attached diagram.
- 4. Proposed Casing & Cementing Program:**  
Please see attached table.
- 5. Drilling Fluids Program:**  
Well to be drilled using closed loop system.  
Please see attached table.
- 6. Evaluation Program:**  
Mud logging program TBD. If any, loggers will be out before Top of Wasatch through TD.  
Cased hole logs will be run from TD through surface casing.
- 7. Abnormal Conditions:**  
Maximum anticipated bottom hole pressure calculated at 5,000' TVD, approximately equals 2,150 psi, assuming 0.64 psi/ft bottom hole pressure gradient.  
  
Maximum anticipated surface pressure equals approximately 1,050 psi, per Onshore Order No. 2 equation:

Max Anticipated Surface Pressure (MASP)

MASP = Pore Pressure at next csg point – (0.22 psi/ft X TVD of next csg point).

Where 0.22 psi/ft is the partially evacuated pressure gradient

**8. Anticipated Starting Dates:**

Drilling is planned to commence after approval of this application, pending winter location construction and drill timing.

**9. Variances:**

Please refer to the attached Drilling Program.

Onshore Order # 2 – Air Drilling Variance

Koch Exploration Company, LLC (KEC) respectfully requests a variance to several requirements associated with air drilling outlined in Onshore Order 2:

- Blowout Prevention Equipment (BOPE) requirements
- Mud program requirements
- Special drilling operation (surface equipment placement) requirements associated with air drilling

This Standard Operating Practices addendum provides supporting information as to why KEC air drilling practices for constructing the surface hole should be granted a variance to Onshore Order 2 air drilling requirements.

The reader should note that the air rig is used only to construct a stable surface casing hole through a historically difficult lost circulation zone. A conventional rig follows the air rig, and is used to drill and construct the majority of the wellbore.

**Background:**

In a typical well, KEC would utilize an air rig for drilling the surface casing hole, an interval from the surface to surface casing depths, which vary in depth from 1,000 to 2,500 feet. The air rig drilling operation does not drill through productive or over pressured formations in the KEC operated field, but does penetrate the Uinta and Green River Formations. The purpose of the air drilling operation is to overcome the severe loss circulation zone in the Green River known as the Bird's Nest while creating a stable hole for the surface casing. The surface casing hole is generally drilled to approximately 500 feet below the Bird's Nest.

Before the surface air rig is mobilized, a rathole rig is utilized to set and cement conductor pipe through a competent surface formation. Generally, the conductor is set at 40 feet. In some cases, conductor may be set deeper in areas that the surface formation is not found competent. This rig also drills the rat and mouse holes if necessary in preparation for the surface casing and production string drilling operations.

The air rig is then mobilized to drill the surface casing hole by drilling a 12 ¼ inch to just above the Bird's Nest interval with an air hammer. The hammer is then tripped and replaced with an 12 ¼ inch tri-cone bit. The tri-cone bit is used to drill to the surface casing point, approximately 500 feet below the loss circulation zone (Bird's Nest). The 9 5/8 inch surface casing is then run and cemented in place, thereby isolating the lost circulation zone.

KEC fully appreciates Onshore Order 2 well control and safety requirements associated with a typical air drilling operation. However, the requirements of Onshore Order 2 are excessive with respect of the air rig layout and drilling operation procedures that are currently in practice to drill and control the surface casing hole in KEC fields.

**Variance for BOPE Requirements**

The air rig operation utilizes a properly lubricated and maintained air bowl diverter system which diverts the drilling returns to a six-inch blooie line. The air bowl is the only piece of BOPE equipment which is installed during drilling operations and is sufficient to contain the air returns associated with this drilling operation. As was discussed earlier, the drilling of the surface hole does not encounter any over pressured or productive zones, and as a result standard BOPE equipment should not be required. In addition, standard drilling practices do not support the use of a BOPE on 40 feet of conductor pipe.

**Variance for Mud Material Requirements**

Onshore Order 2 also states that sufficient quantities of mud material shall be maintained or readily accessible for the purpose of assuming adequate well control. Once again, the surface hole drilling operation does not encounter over pressured or productive intervals, and as a result there is not a need to control pressure in the surface hole with a mud system. Instead of mud, the air rigs utilize water from the reserve pit, or from tanks spotted on location for closed loop drilling, for well control, if necessary. A skid pump which is near the reserve pit or tanks will supply the water to the well bore.

**Variance for Special Drilling Operation (surface equipment replacement) Requirements**

Onshore Order 2 requires specific safety distances or setbacks for the placement of associated standard air drilling equipment, wellbore, and reserve pits. The air rigs used to drill the surface holes are not typical of an air rig used to drill a producing hole in other parts of the US. These are smaller in nature and designed to fit locations in the Natural Buttes area.

Typically, the blooie line discharge point is required to be 100 feet from the well bore. In the case of a KEC well, the reserve pit or closed loop system is only 45 feet from the rig and is used for the drill cuttings. The blooie line, which transports the drill cuttings from the well to the reserve pit or discharge of the closed loop system, subsequently discharges only 45 feet from the well bore.

Typically the air rig compressors are required to be located in the opposite direction from the blooie line and a minimum of 100 feet from the well bore. At the KEC locations, the air rig compressor are approximately 10 feet from the well bore and approximately 60 feet from the blooie line discharge due to the unique air rig design. The air compressors are located on the rig (1250 cfm) and on a standby trailer (1170 cfm). A booster sits between the two compressors and boosts the output from 350 psi to 2000 psi. The design does put the booster and standby compressor opposite from the blooie line.

Lastly, Onshore Order 2 addresses the need for an automatic igniter or continuous pilot light on the blooie line. The air rig does not utilize an igniter as the surface hole drilling operation does not encounter productive formations.

**Variance for FIT Requirements**

KEC also respectfully requests a variance to Onshore Order 2, Section III, Part Bi, for the pressure integrity test (PIT, also known as a formation integrity test (FIT)). This well is not an exploratory well and is being drilled in an area where the formation integrity is well known. Additionally, when a FIT is run with the mud weight as required, the casing shoe frequently breaks down and causes subsequent lost circulation when drilling the entire depth of the well.

**Conclusion**

The air rig operating procedures have effectively maintained well control while drilling the surface holes in the Natural Buttes field. KEC respectfully requests variance form Onshore Order 2 with respect to air drilling well control requirements as discussed above.

**10. Other Information:****DIRECTIONS TO LOCATION:**

Proceed in a westerly direction from Vernal, Utah, along U.S. Highway 40 approximately 13.9 miles to the junction of State Highway 88. Exit left and proceed in a southerly direction along State Highway 88 approximately 16.8 miles to Ouray, Utah. From Ouray, proceed in a southerly direction along the Seep Ridge Road (County B Road 2810) approximately 9.5 miles to the junction of Turkey Track Road (County B Road 5110). Exit right and proceed in a southerly direction along the Turkey Track Road approximately 1.6 miles to the junction of Willow Creek Road approximately 1.2 miles to the junction of Hill Creek Road (Tribal Road 5125). Exit right and proceed in a westerly then southerly direction along the Hill Creek Road approximately 0.5 miles to the junction of County Road 5220 (Class D). Exit right and proceed in a northerly then southwesterly direction along County Road 5220 approximately 6.9 miles to a second Class D County Road to the West. Exit right and proceed in a westerly then northwesterly direction along the second Class D County Road approximately 2.5 miles to a third Class D County Road to the southwest. Exit left and

proceed in a southwesterly then northwesterly direction along the third Class D County Road approximately 0.6 miles to the proposed access road. Follow road flags in a westerly then northwesterly direction approximately 130 feet to the proposed well location.

Total distance from Vernal, Utah to the proposed well location is approximately 53.6 miles in a southwesterly direction.

### **WELL CONTROL**

Pressure Control Equipment:

11" 5M with one annular and 2 rams.  
BOP schematic attached.

BOP Testing:

BOP will be tested with a professional tester to conform to Onshore Order #2.  
Blind and Pipe rams will be tested to rated working pressure, 5,000 psi.  
Annular Preventer will be tested to 50% working pressure, 2,500 psi.  
Casing will be tested to 0.22 psi / ft. or 1,500psi. Not to exceed 70% of burst strength, whichever is greater.  
All lines subject to well pressure will be tested to the same pressure as the blind and pipe rams.  
All BOPE specification and configurations will meet Onshore Order #2 requirements.

### **MUD LOGGING PROGRAM**

**GAS DETECTION:** Continuous from spud to Total Depth.

Geologist to oversee sample collection as per following schedule:

#### **Sample Collection:**

<u>Interval</u>	<u>Depth</u>	<u>Sets</u>
30'	Surface Casing – TD	2

Or as directed by KEC personnel or site Geologist.

### **CASING PROGRAM**

Casing String	Depth	Hole Size	Casing OD	Casing ID	Weight	Grade	Burst Psi	Collapse	Body/Jt Yld	Thread
Conductor	0 - 40'	24	20"							
Surface	+/- 2500'	12 1/4"	9 5/8"	8.921	36#	J-55	3520	2020	564/453	LTC
Production	+/-5000	8 3/4"	7"	6.184	29#	L-80	8160	7020	676/587	LTC

Surface Casing:

Burst Assumption: Casing will be tested to 0.22 psi / ft. or 1,100psi. Not to exceed 70% of burst strength, whichever is greater.

0.73 psi/ft = frac gradient at surface shoe

$B_p = 0.73 \times 2500$

$B_p = 1825$  psi

Safety Factor= 1.9

Collapse Assumption: Fully evacuated casing with Max MW

$$C_p = \text{max MW} * 0.052 * \text{Depth}$$

$$C_p = 14 * 0.052 * 2500$$

$$C_p = 1825 \text{ psi}$$

$$\text{Safety Factor} = 1.1$$

Tension Assumption: Air weight of csg

$$T = 36 * 2500$$

$$T = 90,000$$

$$\text{Body yield SF} = 6.2$$

$$\text{Joint Strength SF} = 5.0$$

Production Casing:

Burst Assumption: Casing will be tested during completion operations as needed for fracture stimulation design.

0.64 psi/ft = bottomhole frac gradient

$$B_p = 0.64 * 5000$$

$$B_p = 3200$$

$$\text{Safety Factor} = 2.6$$

Collapse Assumption: Fully evacuated casing with Max MW

$$C_p = \text{max MW} * 0.052 * \text{Depth}$$

$$C_p = 12.3 * 0.052 * 5000$$

$$C_p = 3198$$

$$\text{Safety Factor} = 2.2$$

Tension Assumption: Air weight of csg

$$T = 29 * 5000$$

$$T = 145,000$$

$$\text{Body Yield SF} = 4.7$$

$$\text{Joint Strength SF} = 4.0$$

### CEMENT PROGRAM

String	Design	Ft. of Fill	Description	Sacks	Excess	Weight (ppg)	Yield (ft3/sk)
Conductor		40'	Premium Type G Cement	150	100%	15.8	1.15
Surface	Lead	1500'	Premium Type V Cement + 3% Salt + 0.25#/sk Flocele	250	50%	11.5	2.81
	Tail	1000'	Premium Type G Cement + 2% CaCl + 0.25#/sk Flocele	410	50%	15.8	1.15
	Top Out Cement	100'	Premium Type G Cement	100		15.8	1.15
Production	Lead	3000'	Conventional cmt + 1.0% extender + 0.7% retarder	250	20%	12.0	1.79
	Tail	2000'	Premium Type G Cement + 2% CaCl + 0.25#/sk Flocele	260	20%	15.8	1.15

**Float Equipment and Centralizers**

Surface: Float shoe, 1 joint, insert float. Centralize first 3 joints with bow spring centralizers, then every third joint to surface. Thread lock guide shoe.

Production: Float shoe, 1 joint, float collar. Centralize first 3 joints with bow spring centralizers then one every third joint into surface casing (2500').

**MUD PROGRAM**

Hole Size and Casing Size (in)	Depth MD (ft)	Formation Depth (ft)	Formation Top	Mud System	Mud Weight (ppg)	Potential Issues
12 1/4"	40'	0'	Green River	Air Mist	N/A	Mud up if needed for over pressured zones
9 5/8"	+/- 2500'	960'	Surface TD			Possible Trona water flows in surface
8 3/4"		4,326'	Wasatch	Drill with Gyp Water and high vis PHPA/Gel sweeps Gypsum increase the efficiency of dewatering Maintain 3ppb Gypsum to increase dewatering efficiency Additions of PHPA down drill pipe for hole cleaning	8.8-9.0	
		4,335'	Top Lower Conf	pH maintained @ 9.0-10.0	9.4-9.8	Hydrateable Clays within the Shale
		4,443'	Base Lower Conf.	Low Fluid loss after mud up with PAC material Adjust viscosity utilizing gel - maintain vis 38-42 sec/qt	9.9-11.0	Potential Gas - mud up SS in Upper portion Ledge Forming
				High viscosity sweeps to ensure proper hole cleaning Flip to a Potassium Formate system if hole problems exist Increase viscosity @ TD to 50-60 sec/qt for logging. Chemically thin for CMT	11.0-11.5	Containing Coal seams Slower Drilling
7"	5,000' TVD 5,000' MD	5000' TVD	TD		11.0-11.5	



T10S, R19E, S.L.B.&M.

KOCH EXPLORATION COMPANY

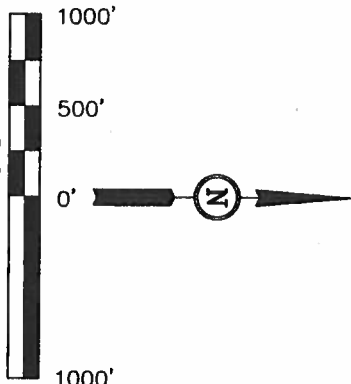
Well location, NORTH ALGER #1-34 SWD, located as shown in the NE 1/4 NE 1/4 of Section 34, T10S, R19E, S.L.B.&M., Uintah County, Utah.

BASIS OF ELEVATION

SPOT ELEVATION AT THE SOUTHWEST CORNER OF SECTION 20, T10S, R20E, S.L.B.&M. TAKEN FROM THE BIG PACK MTN. NW QUADRANGLE, UTAH, UTAH COUNTY 7.5 MINUTE SERIES (TOPOGRAPHICAL MAP) PUBLISHED BY THE UNITED STATES DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY. SAID ELEVATION IS MARKED AS BEING 5251 FEET.

BASIS OF BEARINGS

BASIS OF BEARINGS IS A G.P.S. OBSERVATION.



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

REGISTERED LAND SURVEYOR  
STATE OF UTAH  
NO. 161318  
DATE 02-05-13

REVISED: 02-05-13

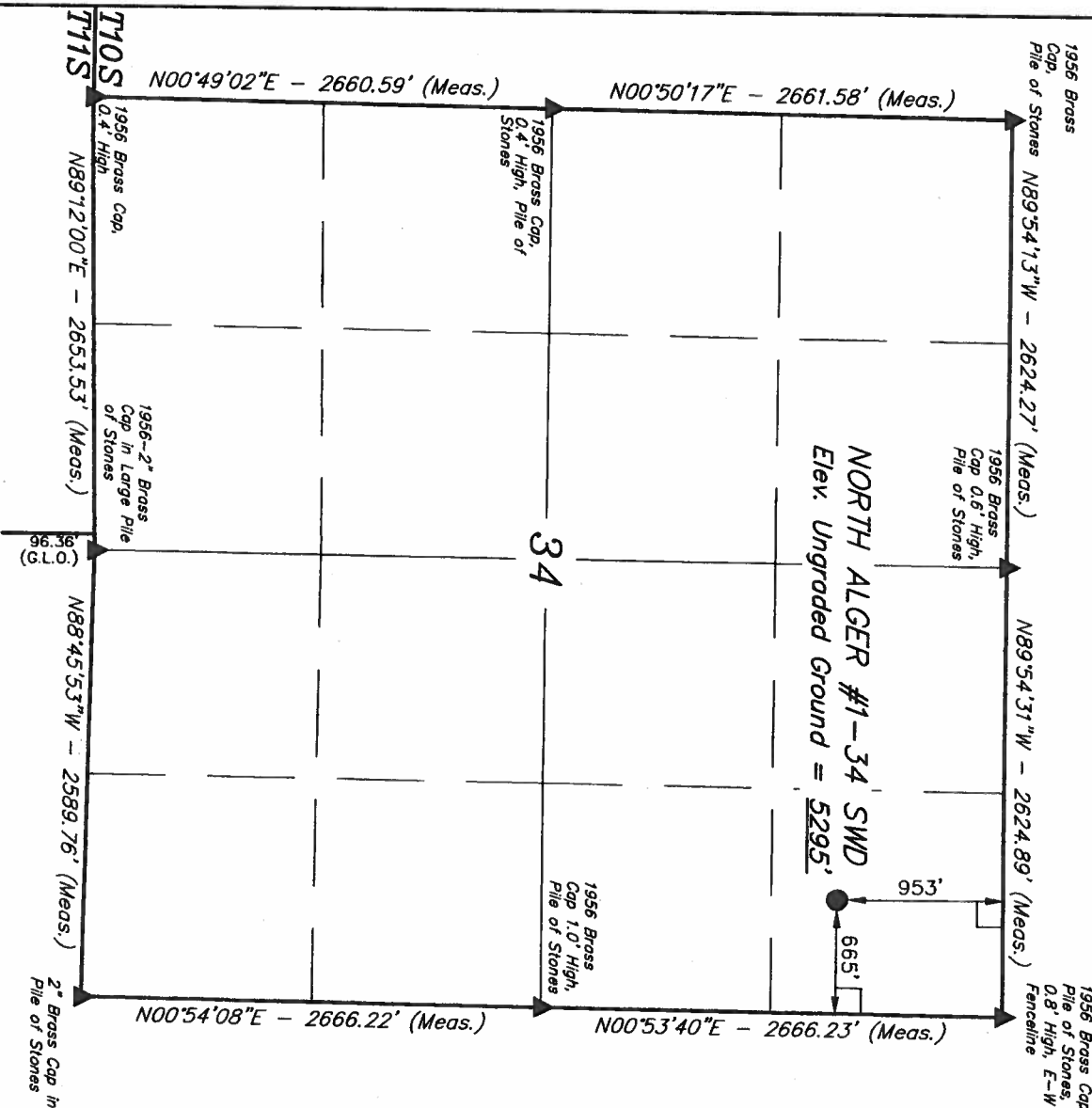
UINTAH ENGINEERING & LAND SURVEYING  
86 SOUTH 200 EAST - VERNAL, UTAH 84078

(435) 789-1017

SCALE 1" = 1000'		DATE SURVEYED: 01-24-13	DATE DRAWN: 01-25-13
PARTY B.H. E.C. S.F.	REFERENCES G.L.O. PLAT		
WEATHER COLD	FILE KOCH EXPLORATION COMPANY		

LEGEND:

- = 90° SYMBOL
- = PROPOSED WELL HEAD.
- ▲ = SECTION CORNERS LOCATED.



NAD 83 (SURFACE LOCATION)

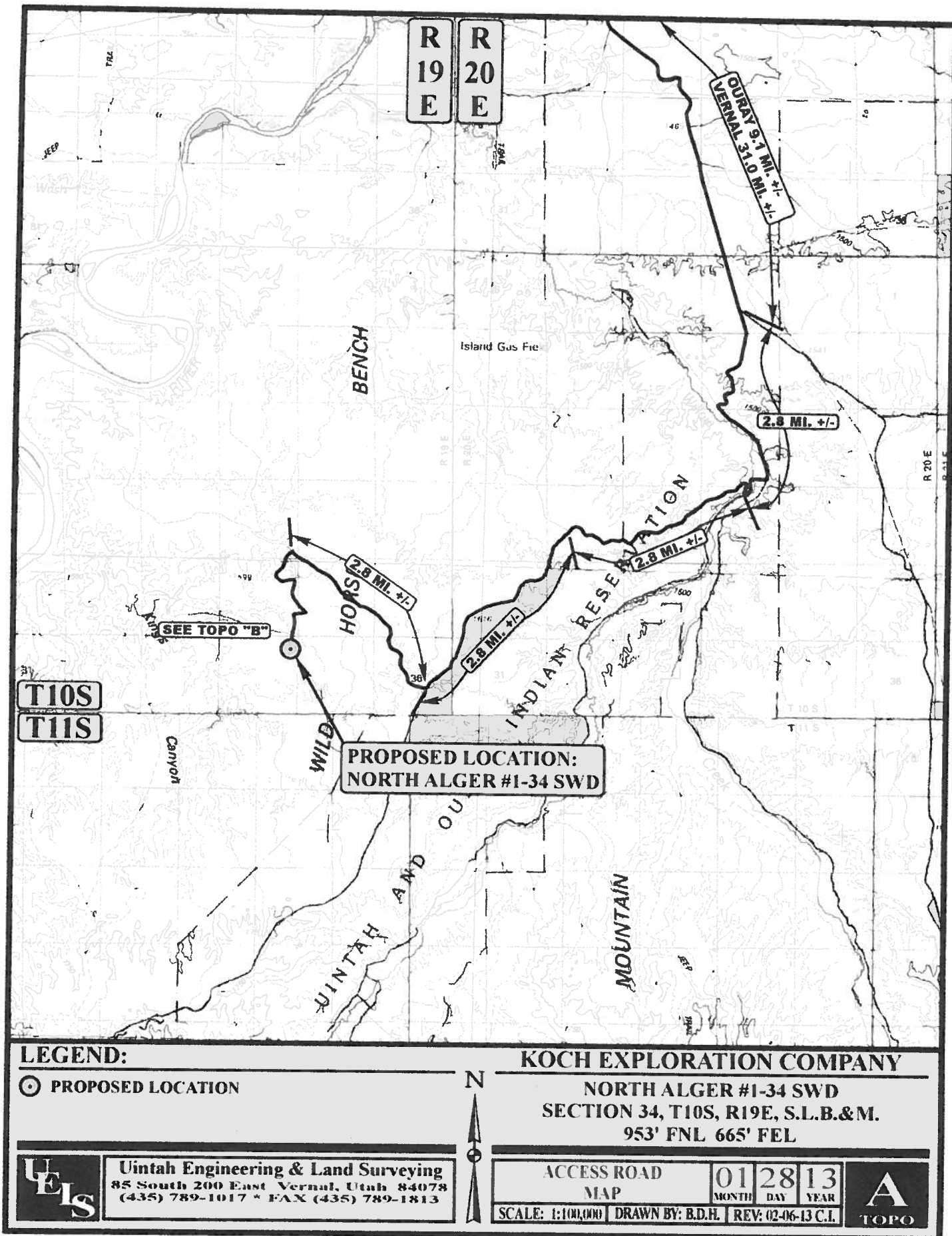
LATITUDE = 39°54'29.62" (39.908228)

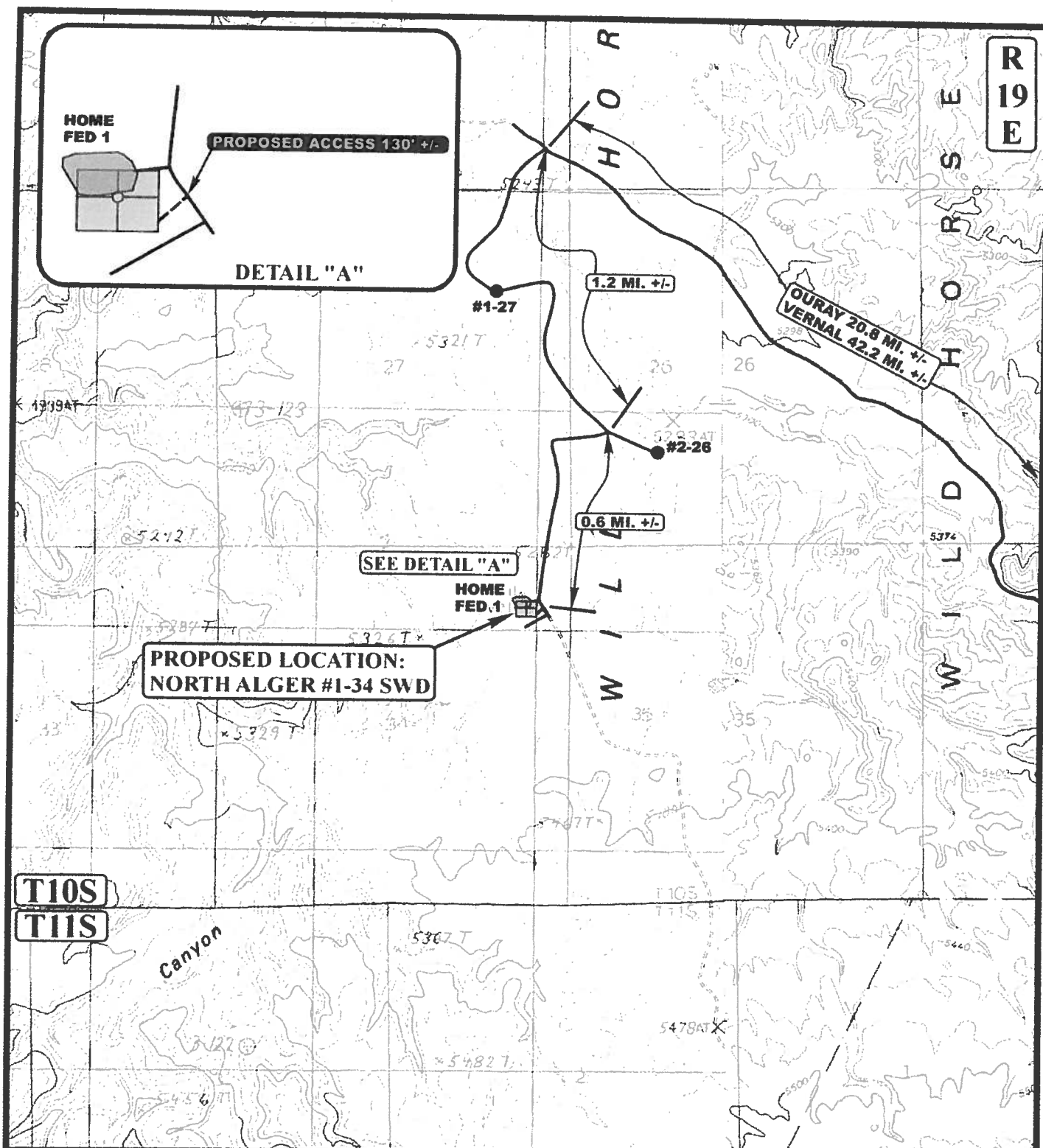
LONGITUDE = 109°45'39.97" (109.761103)

NAD 27 (SURFACE LOCATION)

LATITUDE = 39°54'29.75" (39.908264)

LONGITUDE = 109°45'37.46" (109.760406)





**LEGEND:**

————— EXISTING ROAD  
 - - - - - PROPOSED ACCESS ROAD



**KOCH EXPLORATION COMPANY**

**NORTH ALGER #1-34 SWD**  
**SECTION 34, T10S, R19E, S.L.B.&M.**  
**953' FNL 665' FEL**



**Uintah Engineering & Land Surveying**  
 85 South 200 East Vernal, Utah 84078  
 (435) 789-1017 \* FAX (435) 789-1813

**ACCESS ROAD**  
**MAP**

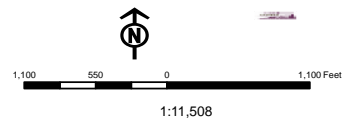
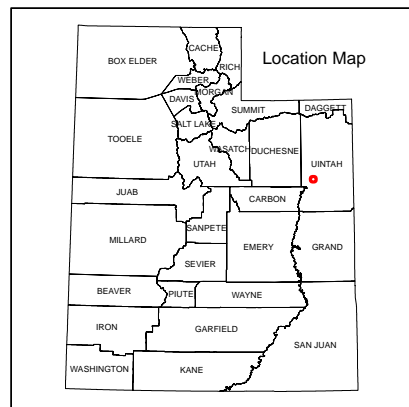
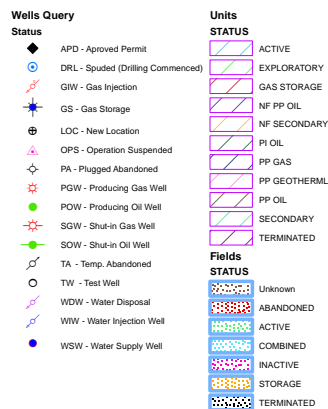
01	28	13
MONTH	DAY	YEAR

SCALE: 1" = 2000' DRAWN BY: B.D.H. REV: 02-06-13 C.L.





Map Prepared: 11/14/2014  
Map Produced by Diana Mason



Well Name	KOCH EXPLORATION COMPANY LLC North Alger 1-34 SWD 4304754			
String	Cond	Surf	Prod	
Casing Size(in)	20.000	9.625	7.000	
Setting Depth (TVD)	40	2500	5000	
Previous Shoe Setting Depth (TVD)	0	40	2500	
Max Mud Weight (ppg)	8.3	11.0	11.5	
BOPE Proposed (psi)	0	500	5000	
Casing Internal Yield (psi)	0	3520	8160	
Operators Max Anticipated Pressure (psi)	6592		25.4	

Calculations	Cond String	20.000	"	
Max BHP (psi)	.052*Setting Depth*MW=	17		
			BOPE Adequate For Drilling And Setting Casing at Depth?	
MASP (Gas) (psi)	Max BHP-(0.12*Setting Depth)=	12	NO	
MASP (Gas/Mud) (psi)	Max BHP-(0.22*Setting Depth)=	8	NO	
			*Can Full Expected Pressure Be Held At Previous Shoe?	
Pressure At Previous Shoe	Max BHP-.22*(Setting Depth - Previous Shoe Depth)=	8	NO	
Required Casing/BOPE Test Pressure=		0	psi	
*Max Pressure Allowed @ Previous Casing Shoe=		0	psi *Assumes 1psi/ft frac gradient	

Calculations	Surf String	9.625	"	
Max BHP (psi)	.052*Setting Depth*MW=	1430		
			BOPE Adequate For Drilling And Setting Casing at Depth?	
MASP (Gas) (psi)	Max BHP-(0.12*Setting Depth)=	1130	NO	air drilling with diverter, Rotating Head req'd.
MASP (Gas/Mud) (psi)	Max BHP-(0.22*Setting Depth)=	880	NO	OK
			*Can Full Expected Pressure Be Held At Previous Shoe?	
Pressure At Previous Shoe	Max BHP-.22*(Setting Depth - Previous Shoe Depth)=	889	NO	OK
Required Casing/BOPE Test Pressure=		2464	psi	
*Max Pressure Allowed @ Previous Casing Shoe=		0	psi *Assumes 1psi/ft frac gradient	

Calculations	Prod String	7.000	"	
Max BHP (psi)	.052*Setting Depth*MW=	2990		
			BOPE Adequate For Drilling And Setting Casing at Depth?	
MASP (Gas) (psi)	Max BHP-(0.12*Setting Depth)=	2390	YES	11" 5M with one annular and 2 rams
MASP (Gas/Mud) (psi)	Max BHP-(0.22*Setting Depth)=	1890	YES	OK
			*Can Full Expected Pressure Be Held At Previous Shoe?	
Pressure At Previous Shoe	Max BHP-.22*(Setting Depth - Previous Shoe Depth)=	2440	YES	OK
Required Casing/BOPE Test Pressure=		5000	psi	
*Max Pressure Allowed @ Previous Casing Shoe=		2500	psi *Assumes 1psi/ft frac gradient	

Calculations	String		"	
Max BHP (psi)	.052*Setting Depth*MW=			
			BOPE Adequate For Drilling And Setting Casing at Depth?	
MASP (Gas) (psi)	Max BHP-(0.12*Setting Depth)=		NO	
MASP (Gas/Mud) (psi)	Max BHP-(0.22*Setting Depth)=		NO	
			*Can Full Expected Pressure Be Held At Previous Shoe?	
Pressure At Previous Shoe	Max BHP-.22*(Setting Depth - Previous Shoe Depth)=		NO	
Required Casing/BOPE Test Pressure=			psi	
*Max Pressure Allowed @ Previous Casing Shoe=			psi *Assumes 1psi/ft frac gradient	

**Koch Exploration Company**  
**North Alger 1-34 SWD**  
**43047548930000**

Formation Depth (MD)  
 UINCA 0

GRNRVR 960

✓ topout 100' Prems<sup>u</sup>

TUC 2765

BUC 2872

BMSW 3200

WSTCH 4326

BLC 4443

953' FML 665' FEL 534 T105 R19E

APP

Surf  
1500

9.625 " Casing

2500 ' MD

2500 ' TVD

29 ' TOC

1557 ' Tail

15 % Washout

12.25 " Hole

Stip cut

TOC @ 34'  
 head @ 3011  
 0% w.d.

APP

Surf  
3000

7 " Casing

5000 ' MD

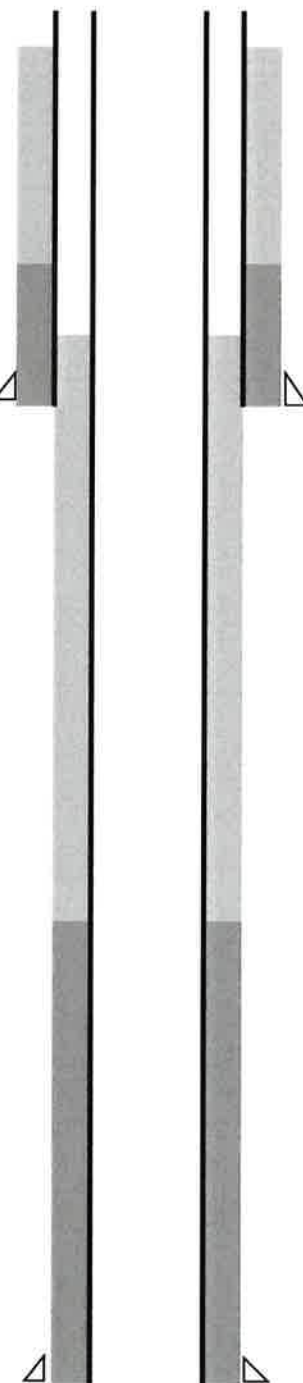
5000 ' TVD

2090 ' TOC

3835 ' Tail

12 % Washout

8.75 " Hole



**Koch Exploration Company**  
**North Alger 1-34 SWD**  
**43047548930000**

1.125												1												1.8											
MA SP		Collapse Strength (psi)	Collapse Load (psi)	Collapse DF	Burst Strength (psi)	Burst Load (psi)	Burst DF	Tension Strength (kips)	Tension DF	Neutral Point (ft)	Tension Air (kips)	Tension Buoyed (kips)																							
1129		2020	1429	1.41	3520	2437	1.44	453	5.03	2080	90.0	75.4																							
MW (ppg)		Internal Grad. (psi)	Backup Mud (ppg)	Internal Mud (ppg)	Max Shoe Pressure (psi)*	CSG Wt (lbs/ft)	CSG Grade	CSG Collar	Cement Lead (sx)	Lead Yield	Cement Tail (sx)	Tail Yield																							
11.0		0.12			2437	36.0	J-55	LTC	230	2.81	473	1.15																							
MA SP		Collapse Strength (psi)	Collapse Load (psi)	Collapse DF	Burst Strength (psi)	Burst Load (psi)	Burst DF	Tension Strength (kips)	Tension DF	Neutral Point (ft)	Tension Air (kips)	Tension Buoyed (kips)																							
1887		7020	2987	2.35	8160	2987	2.73	587	4.90	4121	145.0	119.8																							
MW (ppg)		Internal Grad. (psi)	Backup Mud (ppg)	Internal Mud (ppg)	Max Shoe Pressure (psi)*	CSG Wt (lbs/ft)	CSG Grade	CSG Collar	Cement Lead (sx)	Lead Yield	Cement Tail (sx)	Tail Yield																							
11.5		0.22			2987	29.0	L-80	LTC	250	1.79	260	1.15																							

9.625 " Casing

7 " Casing

# Application for Permit to Drill

## Statement of Basis

### Utah Division of Oil, Gas and Mining

<b>APD No</b>	<b>API WellNo</b>	<b>Status</b>	<b>Well Type</b>	<b>Surf Owner</b>	<b>CBM</b>
10574	43047548930000	LOCKED	WD	F	No
<b>Operator</b>	KOCH EXPLORATION COMPANY LLC		<b>Surface Owner-APD</b>		
<b>Well Name</b>	North Alger 1-34 SWD		<b>Unit</b>		
<b>Field</b>	NATURAL BUTTES		<b>Type of Work</b>	DRILL	
<b>Location</b>	NENE 34 10S 19E S 953 FNL 665 FEL GPS Coord (UTM) 605893E 4418294N				

#### Geologic Statement of Basis

Koch proposes to set 2,500 feet of surface casing cemented to the surface. The base of the moderately saline water is estimated at 3,200 feet. A search of Division of Water Rights records shows no water wells within a 10,000 foot radius of the proposed location. The surface formation at this location is the Uinta Formation. The Uinta Formation is made up of discontinuous sands interbedded with shales and are not expected to produce prolific aquifers. The proposed Casing and cement program should adequately protect usable ground water. Production casing cement should be brought up above the base of the moderately saline ground water to isolate it from fresher waters uphole.

Brad Hill  
APD Evaluator

12/1/2014  
Date / Time

#### Surface Statement of Basis

The surface rights at the proposed location are owned by the Federal Government. The operator is responsible for obtaining all necessary surface permits and rights-of-way.

Brad Hill  
Onsite Evaluator

12/1/2014  
Date / Time

#### Conditions of Approval / Application for Permit to Drill

<b>Category</b>	<b>Condition</b>
	None



## WORKSHEET APPLICATION FOR PERMIT TO DRILL

APD RECEIVED: 10/30/2014

API NO. ASSIGNED: 43047548930000

WELL NAME: North Alger 1-34 SWD

OPERATOR: KOCH EXPLORATION COMPANY LLC (N3755)

PHONE NUMBER: 505 334-9111

CONTACT: J. Darlene Tadlock

PROPOSED LOCATION: NENE 34 100S 190E

Permit Tech Review: ☒

SURFACE: 0953 FNL 0665 FEL

Engineering Review: ☒

BOTTOM: 0953 FNL 0665 FEL

Geology Review: ☒

COUNTY: UINTAH

LATITUDE: 39.90812

LONGITUDE: -109.76112

UTM SURF EASTINGS: 605893.00

NORTHINGS: 4418294.00

FIELD NAME: NATURAL BUTTES

LEASE TYPE: 1 - Federal

LEASE NUMBER: UTU003405

PROPOSED PRODUCING FORMATION(S): WASATCH

SURFACE OWNER: 1 - Federal

COALBED METHANE: NO

## RECEIVED AND/OR REVIEWED:

☒ PLAT☒ Bond: FEDERAL - 82203357☐ Potash☐ Oil Shale 190-5☐ Oil Shale 190-3☐ Oil Shale 190-13☒ Water Permit: 49-2231, 43-8496, 49-1645☐ RDCC Review:☐ Fee Surface Agreement☐ Intent to Commingle

Commingle Approved

## LOCATION AND SITING:

☐ R649-2-3.

Unit:

☐ R649-3-2. General☐ R649-3-3. Exception☒ Drilling Unit

Board Cause No: Cause 259-02

Effective Date: 9/27/2012

Siting: 4 Wells Per 40 Acres

☐ R649-3-11. Directional Drill

Comments: Presite Completed

Stipulations: 4 - Federal Approval - dmason  
5 - Statement of Basis - bhill  
12 - Cement Volume (3) - daynedoucet  
25 - Surface Casing - daynedoucet  
27 - Other - bhill  
28 - Other2 - ddoucet

RECEIVED: March 02, 2015



GARY R. HERBERT  
*Governor*

SPENCER J. COX  
*Lieutenant Governor*

# State of Utah

## DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER  
*Executive Director*

### Division of Oil, Gas and Mining

JOHN R. BAZA  
*Division Director*

## Permit To Drill

\*\*\*\*\*

**Well Name:** North Alger 1-34 SWD

**API Well Number:** 43047548930000

**Lease Number:** UTU003405

**Surface Owner:** FEDERAL

**Approval Date:** 3/2/2015

### Issued to:

KOCH EXPLORATION COMPANY LLC, 950 17th Street, Suite 1900, Denver, CO 80202

### Authority:

Pursuant to Utah Code Ann. 40-6-1 et seq., and Utah Administrative Code R649-3-1 et seq., the Utah Division of Oil, Gas and Mining issues conditions of approval, and permit to drill the listed well. This permit is issued in accordance with the requirements of Cause 259-02. The expected producing formation or pool is the WASATCH Formation(s), completion into any other zones will require filing a Sundry Notice (Form 9). Completion and commingling of more than one pool will require approval in accordance with R649-3-22.

### Duration:

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date

### General:

Compliance with the requirements of Utah Admin. R. 649-1 et seq., the Oil and Gas Conservation General Rules, and the applicable terms and provisions of the approved Application for permit to drill.

### Conditions of Approval:

State approval of this well does not supercede the required federal approval, which must be obtained prior to drilling.

This well is being permitted as a Salt Water Disposal well only. This well shall not be completed for production without approval from DOGM and BLM.

Compliance with the Conditions of Approval/Application for Permit to Drill outlined in the Statement of Basis (copy attached).

Surface casing shall be cemented to the surface.

Cement volume for the 7" production string shall be determined from actual hole diameter in order to place lead cement from the pipe setting depth back to surface and tail cement to 3000' as indicated in the submitted drilling plan.

A properly maintained and lubricated rotating head shall be used for air drilling.

**Notification Requirements:**

The operator is required to notify the Division of Oil, Gas and Mining of the following actions during drilling of this well:

- Within 24 hours following the spudding of the well - contact Carol Daniels at 801-538-5284

(please leave a voicemail message if not available)

OR

submit an electronic sundry notice (pre-registration required) via the Utah Oil & Gas website

at <http://oilgas.ogm.utah.gov>

**Reporting Requirements:**

All reports, forms and submittals as required by the Utah Oil and Gas Conservation General Rules will be promptly filed with the Division of Oil, Gas and Mining, including but not limited to:

- Entity Action Form (Form 6) - due within 5 days of spudding the well
- Monthly Status Report (Form 9) - due by 5th day of the following calendar month
- Requests to Change Plans (Form 9) - due prior to implementation
- Written Notice of Emergency Changes (Form 9) - due within 5 days
- Notice of Operations Suspension or Resumption (Form 9) - due prior to implementation
- Report of Water Encountered (Form 7) - due within 30 days after completion
- Well Completion Report (Form 8) - due within 30 days after completion or plugging

**Approved By:**

A handwritten signature in black ink, appearing to read "John Rogers", written over a horizontal line.

For John Rogers  
Associate Director, Oil & Gas



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 8

1595 Wynkoop Street  
DENVER, CO 80202-1129  
Phone 800-227-8917  
<http://www.epa.gov/region08>

NOV 10 2015

Ref: 8P-W-UIC

**CERTIFIED MAIL**  
**RETURN RECEIPT REQUESTED**

Mr. Doug Howard  
KOCH Exploration Company, LLC  
950 17th Street, #1900  
Denver, Colorado 80202

Re: FINAL Permit  
EPA UIC Permit UT22301-10483  
Well: North Alger #1-34 SWD  
NENE Sec. 34-T10S-R19E  
Uintah County, Utah


(43-047-54893)

Dear Mr. Howard:

Enclosed is your copy of the FINAL Underground Injection Control (UIC) Program Permit for the proposed North Alger #1-34 SWD injection well. A Statement of Basis that discusses the conditions and requirements of this Environmental Protection Agency (EPA) UIC Permit is also included.

The public comment period for this permit ended on OCT 14 2015. No comments on the draft permit were received during the public notice period; therefore the effective date for this EPA UIC Permit is the date of issuance. All conditions set forth herein refer to Title 40 Parts 124, 144, 146, and 147 of the Code of Federal Regulations (CFR) and are regulations that are in effect as of the Effective Date of this Permit.

Please note that under the terms and conditions of this final permit you are authorized only to construct the proposed injection well. Prior to commencing injection, you first must fulfill all "Prior to Commencing Injection" requirements of the final permit, Part II Section C.1, and obtain written Authorization to Inject from EPA. It is your responsibility to be familiar with and to comply with all provisions of your final permit. The EPA forms referenced in the permit are available at <http://www.epa.gov/safewater/uic/reportingforms.html>. Guidance documents for Cement Bond Logging, Radioactive Tracer Testing, Step Rate Testing, Mechanical Integrity Demonstration,

<b>STATE OF UTAH</b> DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING		<b>FORM 9</b>
<b>SUNDRY NOTICES AND REPORTS ON WELLS</b>  Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.		<b>5. LEASE DESIGNATION AND SERIAL NUMBER:</b> UTU003405
<b>1. TYPE OF WELL</b> Water Disposal Well		<b>6. IF INDIAN, ALLOTTEE OR TRIBE NAME:</b>
<b>2. NAME OF OPERATOR:</b> KOCH EXPLORATION COMPANY LLC		<b>7. UNIT or CA AGREEMENT NAME:</b>
<b>3. ADDRESS OF OPERATOR:</b> 950 17th Street, Suite 1900 , Denver, CO, 80202		<b>8. WELL NAME and NUMBER:</b> North Alger 1-34 SWD
<b>4. LOCATION OF WELL</b> <b>FOOTAGES AT SURFACE:</b> 0953 FNL 0665 FEL <b>QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:</b> Qtr/Qtr: NENE Section: 34 Township: 10.0S Range: 19.0E Meridian: S		<b>9. API NUMBER:</b> 43047548930000
<b>PHONE NUMBER:</b> 303 325-2562 Ext		<b>9. FIELD and POOL or WILDCAT:</b> NATURAL BUTTES
<b>COUNTY:</b> UINTAH		<b>STATE:</b> UTAH
11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA		
<b>TYPE OF SUBMISSION</b>	<b>TYPE OF ACTION</b>	
<input checked="" type="checkbox"/> <b>NOTICE OF INTENT</b> Approximate date work will start: <b>5/1/2016</b>  <input type="checkbox"/> <b>SUBSEQUENT REPORT</b> Date of Work Completion:  <input type="checkbox"/> <b>SPUD REPORT</b> Date of Spud:  <input type="checkbox"/> <b>DRILLING REPORT</b> Report Date:	<div style="display: flex; flex-wrap: wrap;"> <div style="width: 33%;"> <input type="checkbox"/> ACIDIZE  <input type="checkbox"/> CHANGE TO PREVIOUS PLANS  <input type="checkbox"/> CHANGE WELL STATUS  <input type="checkbox"/> DEEPEN  <input type="checkbox"/> OPERATOR CHANGE  <input type="checkbox"/> PRODUCTION START OR RESUME  <input type="checkbox"/> REPERFORATE CURRENT FORMATION  <input type="checkbox"/> TUBING REPAIR  <input type="checkbox"/> WATER SHUTOFF  <input type="checkbox"/> WILDCAT WELL DETERMINATION         </div> <div style="width: 33%;"> <input type="checkbox"/> ALTER CASING  <input type="checkbox"/> CHANGE TUBING  <input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS  <input type="checkbox"/> FRACTURE TREAT  <input type="checkbox"/> PLUG AND ABANDON  <input type="checkbox"/> RECLAMATION OF WELL SITE  <input type="checkbox"/> SIDETRACK TO REPAIR WELL  <input type="checkbox"/> VENT OR FLARE  <input type="checkbox"/> SI TA STATUS EXTENSION  <input type="checkbox"/> OTHER         </div> <div style="width: 33%;"> <input type="checkbox"/> CASING REPAIR  <input type="checkbox"/> CHANGE WELL NAME  <input type="checkbox"/> CONVERT WELL TYPE  <input type="checkbox"/> NEW CONSTRUCTION  <input type="checkbox"/> PLUG BACK  <input type="checkbox"/> RECOMPLETE DIFFERENT FORMATION  <input type="checkbox"/> TEMPORARY ABANDON  <input type="checkbox"/> WATER DISPOSAL  <input checked="" type="checkbox"/> <b>APD EXTENSION</b>          OTHER: <input style="width: 100%;" type="text"/> </div> </div>	
12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc. <div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p style="text-align: center; font-size: 1.2em;">KOCH EXPLORATION COMPANY LLC WISHES TO PURSUE A ONE YEAR EXTENSION FOR THE APD ON THIS WELL</p> </div> <div style="width: 35%; text-align: right;"> <p style="color: red; font-weight: bold;">Approved by the Utah Division of Oil, Gas and Mining</p> <p style="color: red; font-weight: bold;">Date: <u>Feb. 12, 2016</u></p> <p style="color: red; font-weight: bold;">By: <u></u></p> </div> </div>		
<b>NAME (PLEASE PRINT)</b> Theron Hoedel	<b>PHONE NUMBER</b> 303 325-2565	<b>TITLE</b> Operations Engineer
<b>SIGNATURE</b> N/A		<b>DATE</b> 2/12/2016



**The Utah Division of Oil, Gas, and Mining**

- State of Utah
- Department of Natural Resources

Electronic Permitting System - Sundry Notices

**Request for Permit Extension Validation Well Number 43047548930000**

API: 43047548930000

Well Name: North Alger 1-34 SWD

Location: 0953 FNL 0665 FEL QTR NENE SEC 34 TWNP 100S RNG 190E MER S

Company Permit Issued to: KOCH EXPLORATION COMPANY LLC

Date Original Permit Issued: 3/2/2015

The undersigned as owner with legal rights to drill on the property as permitted above, hereby verifies that the information as submitted in the previously approved application to drill, remains valid and does not require revision. Following is a checklist of some items related to the application, which should be verified.

- If located on private land, has the ownership changed, if so, has the surface agreement been updated? ☒ Yes ☐ No
- Have any wells been drilled in the vicinity of the proposed well which would affect the spacing or siting requirements for this location? ☐ Yes ☒ No
- Has there been any unit or other agreements put in place that could affect the permitting or operation of this proposed well? ☐ Yes ☒ No
- Have there been any changes to the access route including ownership, or rightof- way, which could affect the proposed location? ☐ Yes ☒ No
- Has the approved source of water for drilling changed? ☐ Yes ☒ No
- Have there been any physical changes to the surface location or access route which will require a change in plans from what was discussed at the onsite evaluation? ☐ Yes ☒ No
- Is bonding still in place, which covers this proposed well? ☒ Yes ☐ No

Signature: Theron Hoedel

Date: 2/12/2016

Title: Operations Engineer Representing: KOCH EXPLORATION COMPANY LLC

RESET

**Application for Permit to Drill  
Request for Permit Extension  
Validation**

(this form should accompany the Sundry Notice requesting permit extension)

**API:** 43047548930000  
**Well Name:** NORTH ALGER 1-34 SWD  
**Location:** 953 FNL, 665 FEL, NENE SEC 34 T10S R19E  
**Company Permit Issued to:** KOCH EXPLORATION COMPANY LLC  
**Date Original Permit Issued:** 3/2/2015

The undersigned as owner with legal rights to drill on the property as permitted above, hereby verifies that the information as submitted in the previously approved application to drill, remains valid and does not require revision.

Following is a checklist of some items related to the application, which should be verified.

If located on private land, has the ownership changed, if so, has the surface agreement been updated? Yes ☐ No ☐ N/A BLM SURFACE

Have any wells been drilled in the vicinity of the proposed well which would affect the spacing or siting requirements for this location? Yes ☐ No ☒

Has there been any unit or other agreements put in place that could affect the permitting or operation of this proposed well? Yes ☐ No ☒

Have there been any changes to the access route including ownership, or right-of-way, which could affect the proposed location? Yes ☐ No ☒

Has the approved source of water for drilling changed? Yes ☐ No ☒

Have there been any physical changes to the surface location or access route which will require a change in plans from what was discussed at the onsite evaluation? Yes ☐ No ☒

Is bonding still in place, which covers this proposed well? Yes ☒ No ☐

  
Signature

2/11/2016

Date

Title: OPERATIONS ENGINEER

Representing: KOCH EXPLORATION COMPANY LLC



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 8

1595 Wynkoop Street  
Denver, CO 80202-1129  
Phone 800-227-8917  
[www.epa.gov/region8](http://www.epa.gov/region8)

Ref: 8P-W-UIC

SEP 20 2016

**CERTIFIED MAIL**  
**RETURN RECEIPT REQUESTED**

Douglas Howard  
Vice President Operations  
KOCH Exploration Company, LLC  
950 17th Street  
Denver, Colorado 80202

34 IDS 19E

RE: Underground Injection Control, Authorization to Commence Injection  
EPA UIC Permit UT22301-10483, North Alger #1-34 SWD Well, API # 43-047-54893

Dear Mr. Howard:

The U.S. Environmental Protection Agency Region 8 UIC Program has received and approved initially required logs and tests for the North Alger #1-34 salt water disposal (SWD) injection well, satisfactorily meeting all "Prior to Commencing Injection" requirements under Final UIC Permit UT22301-10483. KOCH Exploration Company, LLC (KOCH) is hereby authorized to commence injection into the North Alger #1-34 SWD at the Maximum Allowable Injection Pressure (MAIP) of 990 psig, as measured at the well head.

Responsibility for permit compliance and enforcement is now transferred to the EPA Region 8 UIC Technical Enforcement Program. Please direct all monitoring and compliance correspondence, referencing the well name and UIC permit number on all correspondence regarding this well to:

Mr. Gary Wang  
UIC Technical Enforcement Program  
USEPA Region 8: Mail Code 8ENF-UFO  
1595 Wynkoop Street  
Denver, Colorado 80202-1129

Please remember that it is KOCH's responsibility to be aware of, and to comply with, all conditions of Permit UT22301-10483 for the North Alger#1-34 SWD well. Please email results of the Step Rate Test (SRT) within 90-days of the effective date of this letter to William Gallant, with contact information below.



If you have questions regarding the above action, please call William Gallant of my staff at (303) 312-6001 or (800) 227- 8917, extension 312-6455, or email at [gallant.william@epa.gov](mailto:gallant.william@epa.gov).

Sincerely,

A handwritten signature in black ink, appearing to read 'Darcy O'Connor', with a long horizontal stroke extending to the right.

Darcy O'Connor  
Acting Assistant Regional Administrator  
Office of Partnerships and Regulatory Assistance

cc:

Uintah & Ouray Business Committee

Chairman Shaun Chapoose  
Vice-Chairman Edred Secakuku  
Reannin Tapoof, Executive Assistant

Bartholomew Stevens, Superintendent  
BIA - Uintah & Ouray Indian Agency

Antonio Pingree, Deputy Superintendent  
BIA – Uintah & Ouray Indian Agency

Bart Powaukee, Natural Resources Director  
Ute Indian Tribe

Bruce Pargeets, Energy & Minerals Director  
Ute Indian Tribe Energy & Minerals Dept.

Brad Hill, Oil and Gas Permitting Manager  
Utah Division of Oil, Gas, and Mining

Jerry Kenczka, Assistant Field Manager for Lands and Minerals  
BLM - Vernal Office